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The report of a UNESCO committee stated that there were not measurable differences between what is due to innate capacity and what is the result of environmental influences, training, and education. Tests which have made allowance for most differences in environmental opportunities have shown essential similarity in mental characteristics among all human groups. The UNESCO report has been challenged by a series of publications contending that it ignored scientific evidence that the Negro in the United States is inferior in intelligence to the white.

Four distinguished experts in tests and measurements, psychology, social and cultural patterns, and anthropology were asked to state their opinions on the challenge. Questions were asked on innate capacity, test reliability, Negro intelligence, and other innate differences between Negro and whites. The scientists are in substantial agreement that the claims of the challenging publications cannot be supported by any substantial scientific evidence. Moreover, future claims of innate differences between Negro and white cannot be valid unless: distinctive racial homogeneity of the group is demonstrated, social and cultural backgrounds of the group are equal, and adequate tests of proved reliability and validity are used.

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RACE AND INTELLIGENCE

A SCIENTIFIC EVALUATION

Edited by Melvin M. Tumin

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RACE AND INTELLIGENCE

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RACE AND INTELLIGENCE

AN EVALUATION BY

DR. HENRY C. DYER • Educational Testing
PROFESSOR SILVAN S. TOMKINS • Psychology
PROFESSOR RALPH H. TURNER • Sociology
PROFESSOR SHERWOOD L. WASHBURN • Anthropology

Edited and with an Introduction by
PROFESSOR MELVIN M. TUMIN

and "The Study of Race"
by SHERWOOD L. WASHBURN
former president, American Anthropological Association

Anti-Defamation League of B'nai B'rith

Anti-Defamation League of B'nai B'rith
515 Madison Avenue, New York 22, N. Y.

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INTRODUCTION

by
Dr. Melvin M. Tumin,
Professor of Sociology,
Princeton University

Do Negroes and whites in the United States differ significantly in their native mental equipment? Are there reliable tests of mental capacity that prove this to be so? What is the best available scientific evidence regarding the inheritance of intelligence, and what does this evidence say about differences between Negroes and whites? Is there evidence to indicate that when environmental situations and opportunities are equalized, the difference between the average test and scholastic achievement scores of Negroes and whites are reduced? To what extent? Could Negro and white students participate with average equal capacity in the affairs of our culture, assuming equality of opportunity, training and motivation?

These questions, and the many others they imply, have for a long time piqued the curiosity and elicited the passions of many Americans, both in and out of the scientific community. In 1954, the Supreme Court ruled that separate school facilities were not and could not be equal, and that therefore segregation of schools along color lines was illegal. For some years before that historic decision, the majority of social and biological scientists and students of testing and measurement have favored the view that differences between the average scores of Negroes and whites were largely, if not totally, the result of differences in their backgrounds and environments. These differences relate to opportunity, motivation, models, horizons of possible success, perceived utility of success at school, and the like. That viewpoint was expressed cogently and succinctly by a committee of social scientists, including sociologists, anthropologists, psychologists and geneticists who, at a UNESCO conference on this subject in Paris, issued a joint statement which said in part:

> "Whatever classifications the anthropologist makes of man, he never includes mental characteristics as part of those classifications. It is now generally recognized that intelligence tests do not themselves enable us to differentiate safely between what is due to innate capacity and what is the result of environmental influences, training and education. Wher-

ever it has been possible to make all allowances for differences in environmental opportunities, the tests have shown essential similarity in mental characters among all human groups. In short, given similar degrees of cultural opportunity to realize their potentialities, the average achievement of the members of each ethnic group is about the same."

In the past several years, however, some voices have been raised challenging the viewpoint expressed by the leading spokesmen of the major scientific societies concerned with various aspects of Negro-white differences. Notable among them have been a psychologist, Professor Henry Garrett (Professor Emeritus of Columbia University), an anatomist, Professor Wesley Critz George (Professor Emeritus of the University of North Carolina), and a layman, Mr. Carleton Putnam. Professor Garrett has called attention to the findings reported by his former student, Dr. Audrey Shuey, in her book: *The Testing of Negro Intelligence* (J. P. Bell Co. Inc., Lynchburg, Virginia, 1958); Dr. George has written his own book, *The Biology of the Race Problem* (a Report commissioned by the Governor of Alabama, 1962, distributed by the National Putnam Letters Committee, New York), and Mr. Putnam has published various articles and speeches reiterating themes developed in his book *Race and Reason* (Public Affairs Press, Washington, D. C., 1961).

In these documents, the respective authors have contended that the scientific evidence is faulty; that contrary evidence has been ignored; and that, in effect, it can be conclusively shown that the Negro in the United States (and presumably elsewhere) is natively inferior in intelligence to the white. Various national periodicals have seen fit to give currency to some of these claims.

In insisting upon the innate inferiority of the Negro, Professor Garrett and Mr. Putnam have relied almost exclusively upon the findings presented by Dr. Shuey. Since science is always responsive to the suggestion that a particular scientific position may not be well founded, it was deemed important to examine in detail the evidence brought forward by Dr. Shuey,[1] to see whether that evidence is in any way sufficient to challenge the position held by the majority of social scientists.

Toward that end, four outstanding scientists, representing the pro-

[1]Since Dr. George's book was not published until the work of the panel had been completed, it was impossible to secure the same systematic evaluation of that volume as of the Shuey and Putnam volumes. To the extent, however, that Dr. George's contentions are the same as those of Dr. Garrett, Dr. Shuey and Mr. Putnam, and rely on the same kind of materials and evidence, a similarly negative conclusion regarding Dr. George's book would have to be drawn. Dr. George's other claims, resting on various references to assorted works in geography, history and anthropology, remain to be assessed. Some indication of the probable outcome of such an assessment may be provided by the fact that Dr. George leans rather heavily on a new book by Professor Carleton Coon, entitled *The Origin of Races* (New York, Alfred Knopf, 1962). Interested readers may refer to the review of that book by Professor William Howells, Chairman of the Department of Anthropology at Harvard University (New York *Times*, December 9, 1962). In this review, Professor Howells indicates quite clearly that whatever the findings with regard to the *origin* of races, such material cannot relevantly be used to estimate or measure differences between races today.

fessions principally concerned with matters of genetic and social differences among humans, were asked to read the Shuey and Putnam books and to respond to a series of questions about them. The scientists were:

DR. HENRY C. DYER, Vice President, Educational Testing Service, Princeton, N. J., one of the country's foremost authorities on intelligence and ability testing;

PROFESSOR SILVAN S. TOMKINS, Professor of Psychology, Princeton University, Princeton, N. J., one of the country's leading specialists in personality testing;

PROFESSOR RALPH H. TURNER, Chairman of the Department of Sociology, University of California at Los Angeles, and a noted expert on social and cultural patterns in the Negro population; and

PROFESSOR SHERWOOD L. WASHBURN, formerly President of the American Anthropological Association and Chairman of the Department of Anthropology at the University of California at Berkeley, one of the world's most distinguished anthropologists.

The questions put to these four scientific authorities were the following:

1 In your judgment, is there sufficient evidence in the Shuey volume to justify Dr. Shuey's conclusion regarding the presence of native differences between Negroes and whites and thus to reject, in part or in toto, the validity of the position taken by the social scientists in Paris quoted above?

2 To the extent that one can discover a consistent line of argument in the Putnam volume, is there, in your judgment, a sufficient basis of evidence in that volume to justify the contention that there are significant differences in the innate capacities of Negroes and whites, especially innate intelligence, and thus in turn to deny in part or in toto the validity of the UNESCO social scientists' statement quoted above?

3 In scientific usage, the term "race" is ordinarily used to refer to a biologically unitary group which is distinct in its unitary qualities from other biological groups. In terms of this definition, do you, in your own work or your own thinking, consider the American white population as a distinct racial group, differentiated in significant racial characteristics from the American Negro group?

A. If you do, what distinctions do you recognize?

B. To what extent, and for what purposes, is it legitimate, in your opinion, to treat the American Negro population as a homogeneous

group? Is their homogeneity biological, and to what extent? Is it social or cultural, and to what extent?

4 Are there, in your judgment, any satisfactory tests of *native*, i.e. innate or inborn, intelligence? If you think there are, what are these tests? To what extent have the tests been able to free themselves of culturally specific factors, and thus become culture-free?

5 Are there any satisfactory ways, in your judgment, of getting at reliable estimates of native intelligence, other than those now in use? What are these ways? Have they been applied? Where?

6 What do the standard intelligence tests test? Are we able, from the results of such tests, to make any valid inferences about native capacities? Under what conditions? Have these been observed in the volumes in front of you?

7 In what sense is it legitimate to speak of "Negro intelligence" and "white intelligence"?

A. Assume for the moment that we had adequate representative samples of the scores made on intelligence tests by members of the population defined as Negro and those defined as white in America today. What inferences, if any, could be made from these sample test scores regarding the capacity of the members of the groups for common participation in the same government, culture, school system, etc.?

B. What inferences, if any, could be drawn about the likelihood that the same descendants of the two groups would probably score in roughly the same way?

If any similarity of scoring over generations could be inferred, to what extent would this inference be based on an assumption of

a. inheritance of the capacities?

b. continuity of social and cultural factors relevant to the score outcomes?

8 What is the best available scientific evidence at the present time regarding the stability of I.Q. scores, i.e., how sure can we be that an I.Q. score registered at any one time is likely to persist over time? What is the range of possible variation? What factors account for the variation?

9 How useful would you say I.Q. scores are in predicting success or failure in school? For what school levels, if any, are the tests more and less useful? Why?

10 What *innate* factors, if any, in your judgment make it difficult or problematic for Negro and white children and/or adults to share

the same cultural facilities, such as schools, churches, residential areas, playgrounds and recreational areas, etc.?

11 Besides intelligence, are there any other traits or characteristics that (1) are innate, and (2) are significantly differently distributed in the American Negro and white populations? What are these traits?

The responses of the four scientists to this questionnaire are presented in this pamphlet, first in summary form and then in their own language. It will be seen that in certain instances, one or two of the scientists felt that a question did not fall directly into their central professional competence. The summary statements, therefore, represent the shared views of the members of the panel, though in some cases they represent the judgment of two or three rather than all four scientists. These summary statements incorporate excerpts from the responses of the four scientists.

SUMMARY OF FINDINGS

The four scientists are in substantial agreement that the claims advanced by Shuey, Putnam and Garrett (and later by George) cannot be supported by any substantial scientific evidence.

Moreover, the panel concludes that any future claims regarding innate differences between Negroes and whites with regard to intelligence cannot be substantiated unless three conditions are met:

(1) The distinctive *genetic*, or "racial," homogeneity of the Negro group being tested, as well as that of the white group being tested, must be *demonstrated*, not assumed.

(2) The social and cultural backgrounds of the Negroes and whites being tested or otherwise being measured must be fully equal.

(3) Adequate tests of native intelligence and other mental and psychological capacities, with proven reliability and validity, will have to be used.

To date, none of these crucial conditions has been satisfactorily met.

Unless all three conditions are satisfied, one cannot effectively determine whether there are native differences in intelligence or other mental capacities between biologically or genetically distinct groups that can be ascribed to the biological differences between them rather than to differences in their social and cultural situations.

Since none of these three conditions has been met as yet, it is the opinion of the scientists that no claims regarding such differences can be supported. The scientists further join in indicating the extent to which, at various times, differences in test scores have been diminished by reducing the differences in environmental factors believed to have an influ-

ence upon test performance. In view of the demonstrable influence of social and cultural factors upon test performance, the panel judges that further equalization of cultural background and social environment would probably result in further equalization of test scores and thereby discount claims of innate mental differences such as those advanced by Shuey, Garrett and Putnam. In this conclusion, they fully support the statement of the distinguished social scientists who constituted the UNESCO committee.

As Dr. Stanley Diamond has recently put it *(Current Anthropology,* IV: 3, June 1963, p. 323):

All of the historical and psychological evidence scrutinized by anthropologists leads to one conclusion: there is no differential capacity for the creation and maintenance of culture on the part of any population large enough to be sensibly called a race, in the traditional sense of that term. Mongoloids, Negroids and Caucausoids have been physically and culturally inter-fertile throughout the history of modern mankind. Moreover, none of these groups is exclusively associated with any given cultural phenomenon. Nor has any genetically based differential capacity in intelligence among these major populations ever been established. On the contrary, the doctrine of racial equality is fully supported by scientific and historical inquiry.

* * * *

An essay, "The Study of Race," by Professor Sherwood L. Washburn, concludes this pamphlet. The essay is based upon his 1962 presidential address to the American Anthropological Association.

RACE AND INTELLIGENCE

An Examination
of the Scientific Evidence
by Four Authorities

1 *In your judgment, is there sufficient evidence in the Shuey volume to justify Dr. Shuey's conclusion regarding the presence of native differences between Negroes and whites and thus to reject, in part or in toto, the validity of the position taken by the social scientists in Paris?*

SUMMARY OF RESPONSES

There is not sufficient evidence to justify the conclusion that there are native differences between the intelligence of whites and Negroes. The nature of intelligence tests is such that they are incapable of identifying genetic differences between any two groups.

It has long been known that Negroes and whites differ on the average, but with considerable overlap, in their performance on psychological tests. However, it is generally agreed today that these tests do not measure only innate intelligence; what they measure as well are the effects of opportunity to learn the kinds of items included in the tests, the motivation of the individual taking the test, the meaningfulness of the items for him, and his ability to perform in a test situation. In all these respects, the Negro in our society is disadvantaged in comparison with whites in otherwise similar environments. There is no reason, therefore, to suppose that the relatively small average differences in test scores reflect differences in innate intelligence. Unfortunately, no test of mental abilities has yet succeeded in controlling *all* the environmental variables that might influence its validity. These include things such as prenatal and postnatal care, child-rearing practices, the socio-economic level of the family and its intellectual interests, the emotional interaction of parents and children and of siblings with one another, the quality and length of schooling, the social and cultural impact of the community and the vocational opportunities it provides. When efforts are made to equate environments of Negro and white subjects more fully, differences in average I.Q. are lessened, as the environmental interpretation would lead us to expect.

This much Dr. Shuey acknowledges. But in reaching her conclusion that there are native differences between Negroes and whites, she relies upon two unscientific devices.

First, in her summaries she lumps together indiscriminately studies that incorporate serious efforts to control environment and others that make no such effort. None of the studies on which she reports has controlled all the environmental variables *simultaneously*. Some studies take account of certain aspects of socio-economic status; others take account of some aspects of schooling; still others take account of some aspects of cultural opportunity. But in each study, many environmental factors are

left uncontrolled. One cannot logically add miscellaneous differences found under all sorts of uncontrolled or partially controlled conditions, compute an average, and assert that the average difference is attributable to any single unobserved factor such as genetic structure.

Second, she takes as conclusive the residue of difference in I.Q. which remains after serious efforts at correction have been made. However, the corrections which have been employed are quite crude and approximate, so that there is every reason to believe that in the best of studies only part of the difference in opportunity, motivation, and meaningfulness has been controlled. Under these circumstances, the reasonable interpretation is that complete control would reduce the differences between racial averages even further, to the point where they are either trivial or nonexistent.

Dr. Shuey's conclusions that there are significant differences in the innate capacities of Negroes and whites is not supported by sufficient evidence to invalidate the position taken by the social scientists in Paris, that given similarity of cultural opportunity to realize their potentialities, the average achievement of the members of each ethnic group is about the same.

* *

DR. HENRY C. DYER, *Vice President, Educational Testing Service, Princeton, N. J.*

There is *not* sufficient evidence in the Shuey volume to justify the conclusion that there are native differences between the intelligence of whites and Negroes. As a matter of fact, the nature of intelligence tests is such that they are incapable of identifying *native* (i.e., genetic)* differences between any two groups, if indeed such genetic differences exist.

**Native* and *innate* are loosely defined words. I think one should use the word *genetic* in all cases where one is interested in distinguishing between heredity and environment.

PROFESSOR SILVAN S. TOMKINS, *Department of Psychology, Princeton University, Princeton, N. J.*

Dr. Shuey's conclusions that there are significant differences in the innate capacities of Negroes and whites is not supported by sufficient evidence to invalidate the position taken by the social scientists in Paris, that given similarity of cultural opportunity to realize their potentialities, the average achievement of the members of each ethnic group is about the same.

PROFESSOR RALPH H. TURNER, *Chairman of the Department of Sociology and Anthropology, University of California at Los Angeles*

It has long been known that Negroes and whites in the United States

differ on the average, but with sizable overlap, in their performance on psychological tests of personality. But even the most avid defender of intelligence tests today will acknowledge that the tests measure the effects of opportunity to learn the kinds of items included in the tests, motivation, and meaningfulness of the items to the test-takers as well as innate capacity. Since everything we know about the Negro's status in western society leads us to believe that he is disadvantaged in all these respects in comparison with whites in otherwise similar environments, there is no reason to suppose that the relatively small average differences reflect innate intelligence. When efforts of various sorts are made to equate environments of Negro and white subjects more fully, differences in average I.Q. are lessened, as the environmental interpretation leads us to expect. Shuey acknowledges this much, but depends on two devices in reaching her conclusion. First, in her summaries she lumps together indiscriminately those studies incorporating serious efforts to control environment and those containing no such effort. Thus, she reasons that if one research study with a fatal defect in design does not prove the point, several studies all containing the same design error should be convincing. This is like saying that if I weigh myself on a scale that I know to be consistently in error, I can be confident if I weigh myself several times on the same scale and get the same results. Second, she takes as conclusive the residue of difference in I.Q. which remains after serious efforts at correction have been made. However, the corrections which have been employed are quite crude and approximate, so that there is every reason to believe that in the best of studies only part of the difference in opportunity, motivation, and meaningfulness has been controlled. Under these circumstances the reasonable interpretation is that complete control would reduce the differences between racial averages even further, to the point that they are either trivial or nonexistent.

All of the foregoing was known to the signers of the Paris statements, and no new developments since that time have supplied any basis for altered interpretation.

PROFESSOR SHERWOOD L. WASHBURN, *Professor of Anthropology, University of California at Berkeley*

No, there is not sufficient evidence in the Shuey volume for Dr. Shuey's conclusions. But both the UNESCO statement and Dr. Shuey's are vague. The quoted statement says "about the same." Shuey says "some native differences" . . .

The issue is not whether there may, or may not, be some differences, but whether there are differences of an order so great that they must be considered in the operation of democratic society. Here *all* the evidence is unequivocally *no*.

2 *To the extent that one can discover a consistent line of argument in the Putnam volume, is there, in your judgment, a sufficient basis of evidence in that volume to justify the contention that there are significant differences in the innate capacities of Negroes and whites, especially innate intelligence, and thus in turn to deny in part or in toto the validity of the UNESCO social scientists' statement quoted above?*

SUMMARY OF RESPONSES

Putnam's argument regarding inequality depends primarily upon (a) the comparative history of civilizations, and (b) the propriety of judging civilizations summarily on the basis of selected values taken from and applied with the perspective of one of the civilizations being judged. The conditions leading to the rise or decline of civilizations in the popular sense are much too complex and poorly understood to justify inferences concerning the relative intelligence or inherited emotional or moral qualities of peoples.

Civilizations seem to be a product of the congregation of large populations in urban centers. But these circumstances bear little apparent relationship to the intelligence of the people involved. Most "civilizations" seem to be, in part, a product of large-scale military conquest, which brings a vast area under enforced domination by a small center, with the result that the labors of many can be exploited while others can be freed to concern themselves with less basic aspects of life. The circumstances which make one people subjugate others on a comprehensive and lasting basis are only dimly understood, but it would certainly be difficult to equate the wish to subjugate and exploit others with intelligence.

The danger with which Putnam is concerned is the danger that the genes of the superior race will be dissipated by intermarriage with an inferior race. If this danger is as great as he supposes, the danger applies to relationships other than those between Negroes and whites. Putnam in several places attributes racial superiority to English-speaking whites, particularly in contrast to Mediterranean groups making up much of the "second migration." Since intermarriage has already taken place on a large scale here, the danger and the magnitude of the problem would be great and the urgency of action to save the superior race greater than in the case of Negro-white intermarriage.

Even if we could be satisfied that civilizations in general can be judged from the perspective of just one of them, it would only be fair to enumer-

ate and carefully define the criteria by which the superiority of one civilization is to be identified, and then attempt to apply them systematically, so that criminality, dependency, interpersonal suspicion, rewards for ruthlessness, and many other such characteristics could be included in the comparison.

Without such careful analysis, there is no way of knowing whether there is enough agreement on the criteria to supply the basis for argument, or whether white (especially English-speaking) civilizations would really come out as well as Putnam assumes. Putnam makes no systematic appraisal of civilizations; he takes the superiority of our civilization for granted (although he condemns the egalitarian attitudes that are part of it) and supports his claim by selective illustrations.

* *

¶ Dr. Dyer: Putnam depends on Shuey for his statements about the differences between Negroes and whites with respect to intelligence. Consequently, where Shuey is wrong on this matter, Putnam is also wrong.

¶ Professor Tomkins: With respect to the Putnam volume, there is insufficient evidence to justify the contention that there are significant differences in the innate capacities of Negroes and whites. Further, there is a wide overlap of scores on standard intelligence tests and the differences within groups are far greater than the differences between groups.

¶ Professor Turner: Putnam's argument regarding inequality depends primarily upon (a) the comparative history of civilizations, and (b) the propriety of judging civilizations summarily on the basis of selected values taken from and applied with the perspective of one of the civilizations being judged. The conditions leading to the rise or decline of civilizations in the popular sense are much too complex and poorly understood to justify inferences concerning the relative intelligence or inherited emotional or moral qualities of peoples. For example, "civilizations" seem to be a product of the congregation of large populations in urban centers. Some special set of circumstances brings people together in cities before civilization can develop. These circumstances seem to bear little apparent relationship to the intelligence of the people involved. Again, most "civilizations" seem to be in part a product of large-scale military conquest, which brings a vast area under enforced domination by a small center, with the result that the labors of many can be exploited while others can be freed to concern themselves with less basic aspects of life which are developed in civilization. The circumstances which make one people set out to subjugate others on a comprehensive and lasting basis are only dimly understood, but it would certainly be difficult to equate the wish to subjugate and exploit others with intelligence.

Even if we could be satisfied that civilizations in general can be judged from the perspective of just one of them, it would only be fair to enumer-

ate and carefully define the criteria by which a superior civilization is to be identified, and then attempt to apply them systematically so that criminality, dependency, interpersonal suspicion, rewards for ruthlessness, and many other such characteristics could be included in the comparison. Without this kind of careful analysis there is no way of knowing whether there is enough agreement on the criteria to supply the basis for argument, or whether white (especially English-speaking) civilizations would really come out as well as Putnam assumes. Putnam makes no systematic appraisal of civilizations; he takes our superiority for granted (even while condemning the equalitarian attitudes that are part of it) and supports his claims by highly selected illustrations.

¶ PROFESSOR WASHBURN: No.

3 *In scientific usage, the term "race" is ordinarily used to refer to a biologically unitary group which is distinct in its unitary qualities from other biological groups. In terms of this definition, do you, in your own work or your own thinking, consider the American white population as a distinct racial group, differentiated in significant racial characteristics, from the American Negro group?*

A. If you do, what distinctions do you recognize?

B. To what extent, and for what purposes, is it legitimate in your opinion, to treat the American Negro population as a homogeneous group? Is their homogeneity biological, and to what extent? Is it social or cultural, and to what extent?

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SUMMARY OF RESPONSES

Races are populations that are partially endogamous and genetically distinctive. The American Negro is the product of a mixture of Europeans and Africans; approximately one-third of the genes of the group socially classified as American Negro are of European origin.

Any biological trait of a group is a continuum, and the biological traits of individuals in any population are imperfectly correlated. Since the concept of race can be regarded only as a multidimensional continuum, a racial group can be defined as a cluster of individuals occupying an arbitrarily defined space on this continuum. It is certain that many of the clusters will overlap, and a decision whether a given individual belongs to one race or another will, in many cases, be impossible. Furthermore, the development of many biological traits depends importantly upon environmental influences. No human population is genetically homogeneous. This is particularly true of a recently mixed group.

Obviously, many individuals who are socially classified as "Negro" are far more European than African in origin. It is, of course, true that most Americans identify Negroes primarily by skin color. But such homogeneity as the American Negro population may exhibit in skin color and other traits of physical appearance has no demonstrable bearing on the social and cultural patterns of behavior ascribed to the Negro population. Whatever similarities in such behavior are exhibited by persons called Negro are attributable, just as in the case of the white population, to social and cultural backgrounds and primarily to the ways in which whites treat the Negroes and the ways in which Negroes react to this treatment. There is obviously some variation in the social and cultural

situation of Negroes and in the treatment accorded them by whites in different communities. Hence, it follows that the degree of homogeneity of behavior and achievement exhibited by the Negroes will vary with the community in which they live. The variability among Negroes, as a result, is such that one can hardly speak meaningfully of the homogeneity of the Negro population as a whole.

* *

¶ Dr. Dyer: Not being an anthropologist, I am not equipped to answer this question with any authority. However, I do have thoughts on the matter. They go like this: (1) any biological trait constitutes a continuum; (2) the biological traits in any population of individuals are imperfectly correlated; (3) therefore, race can only be regarded as a multidimensional continuum; (4) since this is so, a racial group cannot be rigorously defined except as a cluster of individuals occupying an arbitrarily defined space in the continuum; (5) even so, it is altogether likely—in fact, it is a practical certainty—that many of the clusters will overlap, and the decision whether a given individual belongs to one race or another will, in many cases, be impossible; (6) furthermore, since many biological traits do not develop independently of environmental influences, it is impossible to think of a racial group, so defined, as genetically determined.

A. In light of the above, I cannot answer this question.

B. I would say that the American Negro population is homogeneous primarily with respect to social and cultural factors, that is, it is identifiable primarily (1) by the ways those who consider themselves non-Negroes behave toward individuals they call Negroes; (2) by the ways those called Negroes react to this behavior; and (3) by the perceptions that the two groups have of themselves and of each other. The range of these interactions and perceptions is very wide, and its central tendency varies from one community to another. It follows that the degree of homogeneity of the Negro population varies with the community. Accordingly, one can hardly speak meaningfully of the homogeneity of the Negro population as a whole.

¶ Professor Tomkins: The problems of race is beyond my technical competence.

¶ Professor Turner: A physical anthropologist's question.

¶ Professor Washburn: This is an odd definition of race. Races are populations which are partially reproductively isolated and genetically distinctive. The American Negro is the result of mixing of Europeans and Africans with the result that approximately one-third of the genes of the group socially classified as American Negro are of European origin.

A. The frequencies of several genes (esp. rh°) are different. The frequencies of several phenotypical traits (as hair forms) are different.

B. No human population is genetically homogeneous. This is particularly true of a recently mixed group. Obviously, many individuals who are socially classified as "Negro" are far more European than African in origin.

4 *Are there, in your judgment, any satisfactory tests of* native, *i.e., innate or inborn, intelligence? If you think there are, what are these tests? To what extent have the tests been able to free themselves of culturally specific factors, and thus become culture free?*

SUMMARY OF RESPONSES

There are no tests of native intelligence. In fact, the concept of "native intelligence" is essentially meaningless. Every response to the stimulus material in intelligence tests is, of necessity, a *learned* response. The kind and amount of learning an individual acquires depends upon the experiences that come to him from the environment and upon his structural assets and liabilities. To some extent, structural assets and liabilities are genetically determined; to some extent, they are environmentally determined. With respect to many structural characteristics in an individual, it is not possible to tell whether the characteristic in question has been genetically or environmentally determined. Therefore, there is no way of ascertaining from an intelligence test score to what extent the learning that produced it has been affected by genetic factors. So-called "culture-free" tests are predicated upon one of two assumptions: (a) either the learning required to perform acceptably on the test is commonly and equally available to all people of all cultures, or (b) the stimulus material in the test is completely novel to all people of all cutures. Both assumptions are patently false.

¶ Dr. Dyer: There are no tests of native intelligence. In fact the concept of "native intelligence" is essentially meaningless. Every response to the stimulus material in intelligence tests is of necessity a *learned* response. The kind and amount of learning an individual acquires depends upon the experiences that come to him from the environment and upon his structural assets and liabilities. To some extent, structural assets and liabilities are genetically determined; to some extent, they are environmentally determined. With respect to many structural characteristics in an individual (visual acuity, for example), it is not possible to tell whether the characteristic in question has been genetically or environmentally determined. Therefore, there is no way of determining from an intelligence test score how much of the learning that produced it has been affected by genetic factors. So-called "culture-free" tests are built on one of two assumptions: (1) either the learning required to perform acceptably on the test is commonly and equally available to all people of all cultures, or (b) the stimulus material on the test is completely novel to all people of all cultures. Both assumptions are patently false.

¶ Professor Tomkins: There are no completely satisfactory tests of native intelligence in my opinion, nor are there ways of getting reliable estimates of native intelligence other than those now in use.

¶ Professor Turner: There are attempts to create culture-free intelligence tests which are constructed according to two principles. One is to employ non-language tasks instead of the usual verbal problems. The other is to assemble a test entirely out of items which are found not to discriminate between races, classes, ethnic groups, etc. Neither approach has been fully successful. The educational toy makers have already outwitted the performance test people, by providing parents with a way of training their children in test-type problems. But even before these toys became commonplace there were fundamental differences in the degree to which test-like situations were a part of children's play, so that the tests varied in the familiarity and comprehensibility of the test situation itself.

Evidence from tests compounded by the arbitrary selection of items which do not discriminate between races (the second method) could not be introduced as evidence in the present controversy because the method by which it is established prejudges the present issue.

¶ Professor Washburn: No. Intelligence is the interaction of nature (what is inherited) with the environment. There is no more reason to expect a culture-free intelligence than a diet-free stature. Although inheritance is important in determining stature, no one would think of comparing the statures of a well-fed and a starved group and claiming that the difference is all genetic.

5 *Are there any satisfactory ways, in your judgment, of getting at reliable estimates of native intelligence, other than those now in use? What are these ways? Have they been applied? Where?*

SUMMARY OF RESPONSES

There are no satisfactory ways, at present, of getting reliable estimates of native intelligence. In genetic and animal breeding, the attempt is made to estimate native or genetic characters by equalizing the environment as much as possible first. The residual differences are mainly genetically determined. The only relatively exact method of identifying native human capacities would depend on the indentification of specific genes in man, and research which traced them over generations. All the methods now available to us require the use of circumstantial evidence—the residual difference which is left after we have made all possible corrections for environment. At present it is not known what the units of inheritance are. There is little reason to suppose that I.Q. corresponds to any such unit.

* *

¶ DR. DYER: No. As I have said above, native intelligence is a meaningless concept.

¶ PROFESSOR TOMKINS: There are none.

¶ PROFESSOR TURNER: I suppose the only relatively exact method of identifying native capacities would depend upon the identification of specific genes in man, and research which traced them over generations. All the methods now available to us require the use of circumstantial evidence—the residual difference which is left after we have made all of the corrections we can for environment. At present we don't even know what the units of inheritance are—certainly there is little reason to suppose that I.Q. corresponds to any such unit.

¶ PROFESSOR WASHBURN: In genetic and animal breeding the attempt is made to estimate native or genetic characters by equalizing the environment as much as possible first. The residual differences are mainly genetically determined. In the case of the human I.Q., Shuey's procedure is the exact opposite, to minimize the environmental factor and claim observed differences are due to genetic factors. The satisfactory way to locate genetic difference is to equalize the environment first.

6 What do the standard intelligence tests test? Are we able, from the results of such tests, to make any valid inferences about native capacities? Under what conditions? Have these been observed in the volumes in front of you?

SUMMARY OF RESPONSES

Intelligence tests test how well an individual has learned to perform tasks like those on the test, most of which are similar to tasks required of him in school. They permit an *inference* of intelligence to the extent to which two conditions have been met: that all subjects have had the same practice on what is being tested; and that all subjects have had the same amount and kind of guidance. Only then can one compare performances unaffected by differential advantages and be sure that the same skill is being tested.

For these reasons, vocabulary tests have been considered one of the better gauges of intelligence. But this test fails as a general test of intelligence to the extent to which some individuals are less motivated to communicate verbally, to the extent to which all subjects have not had the same amount of practice, the same help of direct and indirect standardized guidance and the same exposure to models who speak and use language more or less expertly.

When I.Q. differences between subjects are quite large and environment has been similar, the findings may plausibly (but not with certainty) be interpreted as showing some difference in native intelligence. When the differences are small, or opportunity, motivation, and meaningfulness have clearly been unequal, no inference about native intelligence should be made. There are, at present, no tests which meet entirely all the criteria which are necessary correctly to assess the innate potential. In varying degrees they all reflect the impact of differences in motivation, practice, and guidance as these occur in different environmental situations.

¶ Dr. Dyer: (a) What do the standard intelligence tests test? They test how well an individual has learned to perform tasks like those on the test. Most such tasks are similar to those required of the student in school. Consequently, most of the standard intelligence tests test how well the individual is likely to do in school.

(b) Are we able, from the results of such tests, to make any valid inferences about native capacities? Obviously not. You cannot make inferences about something that is meaningless.

¶ Professor Tomkins: The standard intelligence tests test achievements which permit an inference of intelligence to the extent to which the following conditions have been met: (1) all subjects have had the same motivation to learn what is being tested; (2) all subjects are highly motivated to learn what is being tested; (3) all subjects have had the same practice on what is being tested; (4) all subjects have had sufficient practice so that the skill being tested is overlearned so that extrapolation for insufficient practice is not required and so that all can be compared with respect to the same ceiling of ability; (5) all subjects have had standardized guidance so that one can compare performances independent of differential advantages, and be sure that it is the same skill which is being tested; (6) all subjects have been exposed to the same amount of guidance as well as the same kind of guidance. It is for these reasons that such a test as a vocabulary test so often serves as an excellent test of intelligence. To the extent, however, to which some individuals are less motivated to communicate verbally, to the extent to which such motivation is not very high in all subjects, to the extent to which all subjects have not had the same amount of practice, the same exposure to standardized guidance, and to the same amount of guidance, direct and indirect, through exposure to models who speak and use language more or less expertly, this test fails as a general test of intelligence. There are at present no tests which meet entirely all the criteria which are necessary to correctly assess the innate potential. In varying degrees they all reflect the impact of differences in motivation, practice and guidance as these occur in different societies.

¶ Professor Turner: Intelligence tests measure performance on a narrowly selected range of tasks, particularly of the sort that are involved in formal schooling as it is carried out in the United States. Inferences about native capacity depend upon assurance that opportunity, motivation, and meaningfulness are identical for all test takers and have been identical during the period of learning the tasks which are included in the test. When I.Q. difference between subjects is quite large and environment has been similar, the scientist might plausibly (but not with certainty) interpret his finding as showing some difference in native intelligence. When either differences are small or opportunity, motivation, and meaningfulness have

clearly been unequal, no inference about native intelligence should be made.

Putnam pays some attention to the influence of environmental opportunity, but discounts efforts to control these variables by insisting that only racial averages should be compared. Shuey acknowledges the interpretations that investigators have made in explaining the lack of equality in average I.Q. between Negroes and whites. She stresses the fact that efforts to control environmental factors have been only partially successful in equalizing Negro and white scores. In two important respects, however, Shuey fails in the final analysis to give full consideration to the conditions mentioned. (a) She summarizes together studies with little control of environment and studies with considerable control. (b) She assumes that controls are complete and adequate, rather than recognizing that a substantial reduction of difference when crude controls are employed suggests that greater reduction would occur if adequate controls could be devised and used.

¶ Professor Washburn: Others can answer this much better than I. It is primarily word and number ability and speed.

7 *In what sense is it legitimate to speak of "Negro intelligence" and "white intelligence"?*

A. Assume for the moment that we had adequate representative samples of the scores made on intelligence tests by members of the population defined as Negro and those defined as white in America today. What inferences, if any, could be made from these sample test scores regarding the capacity of the members of the groups sampled for common participation in the same government, culture, school system, etc.?

B. What inferences, if any, could be drawn about the likelihood that the same descendants of the two groups would probably score in roughly the same way?

If any similarity of scoring over generations could be inferred, to what extent would this inference be based on an assumption of 1) inheritance of the capacities? 2) continuity of social and cultural factors relevant to the score outcomes?

SUMMARY OF RESPONSES

There is no sense in which it is legitimate to speak of "Negro" vs. "white" intelligence. Intelligence is an individual rather than a group characteristic. To the extent that it has an inherited basis, it is influenced by the individual's immediate antecedents and not by the total race to which he belongs. It would be necessary radically to reduce caste and class differences between Negroes and whites before their innate intelligence could be compared. Infant and young-child comparisons suggest greater similarities between Negroes and whites in the early years. Many of the differences reported in the past between Negro and white intelligence as constituting evidence for heredity have been shown to be the consequences of cultural and class differences.

Since an intelligence test samples a variety of mental functions that are, to some extent, predictive of performance in school, in college, and in the vocations, a score on such a test indicates, within limits, the degree to which an individual has acquired these functions. The scores vary enormously from one individual to another. The range of intelligence test scores obtained by Negroes is, as far as we know, just as great as the range of intelligence test scores obtained by whites. That is, both Negroes and whites have equal at the top and at the bottom of the range. Insofar as the scores predict educational and vocational achievement, one would suppose that a high-scoring Negro should have the same probability of a successful educational or vocational performance as a white with the same score.

The correlation between the intelligence-test scores of parents and the intelligence-test scores of their children has usually been found to be in the neighborhood of .5. This means that twenty-five percent of the variance in the children's scores can be predicted from their parents' scores. Seventy-five percent of the variance in the children's scores, therefore, cannot be predicted from the parents' scores. Because of this unpredictable variance, it is to be expected that the scores of children in any group will regress toward the mean of that group, i.e., children of low-scoring parents will tend to have higher scores than their parents,

and children of high-scoring parents will tend to have lower scores than their parents.

For the group as a whole, the mean scores of the children will be about the same as the mean scores of the parents, provided the environmental conditions affecting the children's scores are approximately the same as the environmental conditions that affected the parents' scores. A change in the environmental conditions which favored the children over the parents would tend to raise the mean of the children's scores above that of the parents' scores. Thus, if a group of Negro children were given cultural opportunities superior to those available to their parents, one would expect that the mean score of the Negro children would be higher than the mean score of their parents.

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¶ Dr. Dyer: A. There is no sense I can think of in which it is legitimate to speak of "Negro intelligence" vs. "white intelligence." An intelligence test samples a variety of mental functions that are, to some extent, predictive of performance in school, in college, and in the vocations. A score on an intelligence test indicates, within limits, the degree to which an individual has acquired these functions. The scores vary enormously from one individual to another. The range of intelligence test scores obtained by Negroes is, as far as we know, just as great as the range of intelligence test scores obtained by whites. That is, both Negroes and whites have scored at the top and at the bottom of the range. Insofar as the scores predict educational and vocational achievement, one would suppose that a high-scoring Negro should have the same probability of a successful educational or vocational performance as a white with the same score.

This supposition, however, may not be entirely correct. Consider two groups of individuals. Group A has had *superior* educational and cultural advantages. Group B has had *inferior* educational and cultural advantages. It is altogether likely that the success of individuals in Group A with a given score will be overpredicted by the score, and individuals in Group B, having the same score, will be underpredicted. The reason for this is that the score obtained by the individuals in Group B, even though it is the same as that obtained by individuals in Group A, may represent superior achievement. That is, those in Group B may have had to work harder to attain the same score. Hence, insofar as Negroes as a group are culturally and educationally disadvantaged, as compared with whites, a Negro's high score on an intelligence test may well *under*predict his subsequent educational and vocational performance, provided of course, that after the testing he has the same opportunities to perform as those accorded to whites.

B. The correlation between the intelligence test scores of parents and the intelligence test scores of their children has usually been found to be in the neighborhood of .5. This means that 25 percent of the variance in the children's scores can be predicted from their parents' scores. This

leaves 75 percent of the variance in the children's scores that can*not* be predicted from the parents' scores. Because of this unpredictable variance, it is to be expected that the scores of children in any group will regress toward the mean of that group, i.e., children of low-scoring parents will tend to have higher scores than their parents, and children of high-scoring parents will tend to have lower scores than their parents. For the group as a whole, the mean scores of the children will be about the same as the mean scores of the parents, *provided the environmental conditions affecting the children's scores are approximately the same as the environmental conditions that affected the parents' scores.* A change in the environmental conditions which favored the children over the parents would tend to raise the mean of the children's scores above that of the parents' scores. Thus, if a group of Negro children were given cultural opportunities superior to those available to their parents, one would expect that the mean score of the Negro children would be higher than the mean score of their parents.

¶ Professor Tomkins: It would be necessary to radically reduce caste and class differences between Negroes and whites before their innate intelligence could be compared. Infant and young child comparisons suggest greater similarities between Negroes and whites in the early years. Many of the differences reported in the past between Negro and white intelligence as constituting evidence for heredity have been shown to be the consequence of cultural and class differences. Although one cannot be certain, the most reasonable present interpretation of the remaining test differences would be that they were the consequence of environmental differences, though the possibility of some genetic differences cannot be entirely excluded.

¶ Professor Turner: Intelligence is an individual rather than a group characteristic. To the extent that it has an inherited basis, it is influenced by the individual's immediate antecedents and not by the total race to which he belongs. By the time an individual's antecedents have been traced back a few generations their number becomes so large that the contribution of any single one of them is trivial.

So long as Negroes are socially set apart they are bound to maintain a subculture somewhat at variance from that of whites. Hence, there is every reason to expect on social and cultural grounds that any group differences in scores on I.Q. tests between Negroes and whites would persist over generations.

¶ Professor Washburn: A. With the tests as known, there is no way to tell whether the differences are determined by heredity or environment.

B. If environmental factors change, the test results will go up or down.

8 *What is the best available scientific evidence at the present time regarding the stability of I.Q. scores, i.e., how sure can we be that an I.Q. score registered at any one time is likely to persist over time? What is the range of possible variation? What factors account for the variation?*

SUMMARY OF RESPONSES

The stability of I.Q. scores is in large part an effect of the nature of the measure. Intelligence tests were devised to maximize the stability of the scores over time, and items which changed the I.Q. radically were eliminated. But it is entirely possible to construct tests so that the intelligence quotient (ratio of mental age to chronological age) would change in any desired direction for any group of subjects.

The degree to which an earlier I.Q. score predicts a later one depends on the age at which the earlier score is obtained; the interval of time elapsing between the obtaining of the two scores; the similarity of content between the two tests; the nature of the sample on which each test was standardized; the degree to which the administration of the separate tests has been standardized; the sampling error in the test itself; the units of measurement each test employs; and intervening environmental influences. With so many factors operating, it is impossible to quote any single figure to describe the extent of variability one may expect.

Suppose the same logic is applied to both white and Negro scores. Northern whites test ahead of Southern whites. In dealing with these scores, no one questions that the differences are largely environmental (although it is impossible to prove that every fraction of a percent is). The white scores show the same major pattern as the Negro—high scores occur where there is the greatest educational opportunity. Undoubtedly, the average I.Q. scores of both groups could be raised, and one cannot predict which might be ahead. Large series of tests from Los Angeles indicate that Negroes, given greater educational opportunities, will test *above* the present white averages.

It must be noted, however, that the I.Q. score, which is a derived score attached to intellegence tests, is now generally frowned upon by measurement experts because the assumptions on which it rests differ from one test to another and from one standardization group to another. The common meaning that it appears to have across tests and populations is quite unreal and misleading.

¶ Dr. Dyer: The best reference summarizing the scientific evidence on the stability of intelligence test scores is to be found in Anne Anastasi's *Differential Psychology* (Third Edition, Macmillan, 1958), on pages 231-238. The degree to which an earlier I.Q. score predicts a later one depends on (a) the age at which the earlier I.Q. is obtained, (b) the interval of time elapsing between the obtaining of two I.Q.'s, (c) the similarity of content between the successive tests, (d) the nature of the sample on which each test was standardized, (e) the degree to which the administration of the separate tests has been standardized, (f) the sampling error in the test itself, (g) the units of measurement each test employs, and (h) intervening environmental influences. Since so many different factors are operating in the situation, it is meaningless to quote any single figure to describe the amount of variability one can expect. For school age children who take the *same* intelligence test a year apart, the correlation between the two sets of scores has been shown to be about .90; if the interval is five years, the correlation drops to .70. One study of the correlation between preschool test scores obtained before age 4 and scholastic aptitude test scores obtained on the same individuals at entrance into college was .12. This range of correlation coefficients (.12 to .90) should give some idea of the complexity of the situation. It might be added that the "I.Q.," which is a type of derived score attached to intelligence tests, is now generally frowned upon by experts in measurement because the assumptions on which it rests differ from one test to another and from one standardization group to another. The common meaning that it appears to have across tests and populations is quite unreal and misleading.

¶ Professor Tomkins: The stability of I.Q. scores is, in large part, an artifact of the nature of the measure. Intelligence tests and the intelligence quotient were devised to maximize the stability of the scores over time, and items which changed the I.Q. radically were systematically eliminated. The inteligence quotient is the ratio of the mental age to the chronological age so that an individual will, if the tests have been so constructed, remain constant in his I.Q. It is entirely possible to construct tests so that the intelligence quotient would change in any desired direction for any group of subjects. Even with the present tests, which have been designed to maximize the stability of this score, there is evidence that those who are mentally active longer have more stable scores than those who become relatively inactive intellectually.

¶ Professor Turner: A psychologist's question.

¶ Professor Washburn: In comparing large groups, the scores are greatly affected by environment. This is well covered in numerous sources and the main points were all in Otto Klineberg's *Race Differences* many years ago. But I think the most telling argument is to apply the same logic to

both white and Negro scores. This is rarely done. Northern whites test ahead of Southern whites. Ohio vs. Alabama. Are we seriously to suggest that the intelligent whites migrated North? Do we suggest that the whites of Alabama should not vote? In dealing with the white scores *no one* questions that the differences are largely environmental (although it is impossible to prove that every fraction of a percent is). The white scores show the same major pattern as the Negro, with the high scores where there is most educational opportunity. Obviously, the average I.Q. of both groups could be raised, and which might be ahead cannot be anticipated. Large series from Los Angeles show that Negroes may test well over 100, so we know that Negroes, given a break, will *test above* the present white averages.

9 *How useful would you say I.Q. scores are in predicting success or failure in school? For what school levels, if any, are the tests more and less useful? Why?*

SUMMARY OF RESPONSES

I.Q. scores obtained from well validated, well standardized tests predict average school grades best at the elementary level (correlation about .7), least well at the college level (correlation about .5). They are useful in estimating a student's probability of success—those who score low are almost certainly in for scholastic trouble. But even here caution must be exercised, for it has been demonstrated that the average score of a class can be raised ten points in only three months of drill on reading.

* *

¶ Dr. Dyer: I.Q. scores obtained from well validated, well standardized tests predict average school grades best at the elementary level (correlation about .7), least well at the college level (correlation about .5). They are useful in estimating a student's probability of success. (But see my answer to Question 7 concerning the effect on probability of grouping individuals in accordance with the type of environment to which they have been exposed.)

¶ Professor Tomkins: I.Q. scores are reasonably successful in predicting success or failure in school, correlating approximately from .30 to .40 with later grades. It is clear, however, that this predictive power is far from perfect, accounting as it does for no more than 16 percent of the variance, or 25 percent under the most ideal conditions.

¶ Professor Turner: A psychologist's or educationalist's question.

¶ Professor Washburn: I.Q. scores are useful in predicting school behavior. This is because they have been devised and corrected to do just that. Individuals with very low I.Q.'s will have trouble. But even here caution must be used for the average score of a class can be raised ten points in only three months of drill on reading.

10 *What* innate *factors, if any, in your judgment, make it difficult or problematic for Negro and white children and/or adults to share the same cultural facilities, such as schools, churches, residential areas, playgrounds and recreational areas, etc.?*

SUMMARY OF RESPONSES

There would appear to be no innate factors which make it difficult for Negro and white children or adults to share the same cultural facilities.

* *

¶ Dr. Dyer: I know of no innate (i.e. genetic) factors that make it difficult or problematical for Negro and white children and/or adults to share the same cultural facilities.

¶ Professor Tomkins: There would appear to be no innate factors which would make it difficult or problematic for Negro and white children or adults to share the same cultural facilities.

¶ Professor Turner: I know of none.

¶ Professor Washburn: No innate factors. Only cultural ones.

11 *Besides intelligence, are there any other traits or characteristics that (1) are innate, and (2) are significantly differently distributed in the American Negro and white populations? What are these traits?*

SUMMARY OF RESPONSES

There are some differences in gene frequencies and some anatomical variations between the two groups. There is no evidence, however, that these are in any way relevant to the common participation in the affairs of our society by Negroes and whites or that they are in any way connected to or determinative of the behavior of Negroes and the behavior of whites.

It seems clear from all the evidence available that in all abilities and performances there is very wide overlapping between the two groups. If selection is based on high performance, whether in school or business, or the arts, all races will be represented. A democratic society offers the chance to compete to all who are competent and thus encourages the greatest possible competence. Racism bars the opportunity to compete, not because a group cannot compete successfully, but because it can.

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¶ DR. DYER: On the evidence to date, there are no genetic factors that differentiate significantly between the behavior of Negroes and the behavior of whites.

¶ PROFESSOR TOMKINS: There are no known innate characteristics which are significantly differently distributed in the American Negro and white populations.

¶ PROFESSOR TURNER: Physical anthropologist's question.

¶ PROFESSOR WASHBURN: There are some gene frequencies and anatomical variations. There is no evidence that these are important to social participation.

I think that the essential point is that in all abilities, all performances, there is very wide overlapping between the groups under consideration. If selection is for high performance (whether in school, business, the arts), all races will be represented. Hopefully, democratic society will offer the

chance to compete to all who are competent and thus encourage the greatest possible amount of competence. Racism will bar the opportunity to compete, not because a group cannot compete successfully, but because it can.

All performances have strong environmental components (opportunity, motivation, diet, medical care, etc.). There is no way to tell whether there might be small genetically determined differences until environmental opportunities are equalized. However, we are certain that there is so much overlapping between all major groups that opportunity should be open to all and that judgment should be made on the basis of individual, not group, ability. If Negroes could not pass college examinations, it would not be necessary to have laws to keep them out of colleges.

THE STUDY OF RACE

by
Professor Sherwood L. Washburn,
University of California at Berkeley

This essay is based upon Professor Washburn's 1962 presidential address to the American Anthropological Association.

The races of man are the result of human evolution, of the evolution of our species. The races are open parts of the species, and the species is a closed system. If we look, then, upon long-term human evolution, our first problem must be the species and the things which have caused the evolution of all mankind, not the races, which are the results of local forces and which are minor in terms of the evolution of the whole species. (A contrary view has recently been expressed by Prof. Carleton S. Coon in *The Origin of Races*. I think that great antiquity of human races is supported neither by the record nor by evolutionary theory.)

The evolution of races is due, according to modern genetics, to mutation, selection, migration, and genetic drift. It is easy to shift from this statement of genetic theory to complications of hemoglobin, blood groups or other technical information. But the point I want to stress is that the primary implication of genetics for anthropology is that it affirms the relation of culture and biology in a far firmer and more important way than ever in our history before. Selection is for reproductive success, and in man reproductive success is primarily determined by the social system and by culture. Effective behavior is the question, not something else.

Drift depends on the size of population, and population size, again, is dependent upon culture, not upon genetic factors as such. Obviously, migration depends on clothes, transportation, economy, and warfare and is reflected in the archeological record. Even mutation rates are now affected by technology.

Genetic theory forces the consideration of culture as the major factor in the evolution of man. It thus reaffirms the fundamental belief of anthropologists that we must study man both as a biological and as a social organism. This is no longer a question of something that might be desirable; it must be done if genetic theory is correct.

We have, then, on the one hand the history of genetic systems, and on the other hand the history of cultural systems, and finally, the interrelation between these two. There is no evolution in the traditional anthropological sense. What Franz Boas referred to as evolution was orthogenesis — which receives no support from modern genetic theory. What the geneticist sees as evolution is far closer to what Boas called history than to what he called evolution, and some anthropologists are still fighting a nineteenth-century battle in their presentation of evolution. We have, then, the history of cultural systems, which you may call history; and the history of genetic systems, which you may call evolution if you want to, but if you use this word remember that it means selection, migration, drift — it is real history that you are talking about and not some mystic force which constrains mankind to evolve according to some orthogenetic principle.

There is, then, no possibility of studying human raciation, the process of race formation, without studying human culture. Archeology is as important in the study of the origin of races as is genetics; all we can do is reconstruct as best we can the long-term past, and this is going to be very difficult.

The Problem of Classification

Now let me contrast this point of view with the one which has been common in much of anthropology. In the first place, anthropology's main subject, the subject of race, disregarded to an amazing degree the evolution of the human species. Anthropologists were so concerned with the subdivisions within our species and with minor detailed

differences between small parts of the species that the physical anthropologists largely forgot that mankind is a species and that the important thing is the evolution of this whole group, not the minor differences between its parts.

If we look back to the time when I was educated, races were regarded as types. We were taught to go to a population and divide it into a series of types and to re-create history out of this artificial arrangement. This kind of anthropology is still alive, amazingly, and in full force in some countries; relics of it are still alive in our teaching today.

Genetics shows us that typology must be completely removed from our thinking if we are to progress. For example, let us take the case of the Bushmen. The Bushmen have been described as the result of a mixture between Negro and Mongoloid. Such a statement could only be put in the literature without any possible consideration of migration routes, of numbers of people, of cultures, of any way that such a mixing could actually take place. The fact is that the Bushmen had a substantial record in South Africa and in East Africa and there is no evidence that they ever were anywhere else except in these areas. In other words, they are a race which belongs exactly where they are.

If we are concerned with history let us consider, on the one hand, the ancestors of these Bushmen 15,000 years ago and the area available to them, to their way of life, and, on the other hand, the ancestors of Europeans at the same time in the area available to them, with their way of life. We will find that the area available to the Bushmen was at least twice that available to the Europeans. The Bushmen were living in a land of optimum game; the Europeans were living close to an ice sheet. There were perhaps from three to five times as many Bushmen ancestors as there were European ancestors only 15,000 years ago.

If one were to name a major race, or a primary race, the Bushmen have a far better claim in terms of the archeological record than the Europeans. During the time of glacial advance more than half of the Old World available to man for life was in Africa. The numbers and distributions that we think of as normal and the races whose last results we see today are relics of an earlier and far different time in human history.

There are no three primary races, no three major groups. The idea of three primary races stems from nineteenth-century typology; it is totally misleading to put the black-skinned people of the wold together – to put the Australian in the same grouping with the inhabitants of Africa. And there are certainly at least three independent origins of the small, dark people, the Pygmies, and probably more than that. There is no single Pygmy race.

If we look to real history we will always find more than three races, because there are more than three major areas in which the raciation of our species was taking place.

If we attempt to preserve the notion of three races, we make pseudo-typological problems. Take for example, again, the problem of the aboriginal Australian. If we have only three races, either they must be put with the people of Africa, with which they have nothing in common, or they must be accounted for by mixture, and in books appearing even as late as 1950, a part of the aboriginal Australian population is described as European, and listed with the Europeans, and the residue is listed with the Africans and left there.

The concept of race is fundamentally changed if we actually look for selection, migration, and study people as they are (who they are, where they are, how many they are); and the majority of anthropological textbooks need substantial revision along these lines.

Since races are open systems which are intergrading, the number of races will depend on the purpose of the classification. This is, I think, a tremendously important point. It is significant that as I was reviewing classifications in preparing this paper, I found that almost none of them mentioned any purpose for which people were being classified. Race isn't very important biologically. If we are classifying races in order to understand human history, there aren't many human races, and there is very substantial agreement as to what they are. There are from six to nine races, and this difference in number is very largely a matter of definition. These races occupied the major separate geographical areas in the Old World.

If one has no purpose for classification, the number of races can be multiplied almost indefinitely, and it seems to me that the erratically varying number of races is a source of confusion to student, to layman, and to specialist. I think we should require people who propose a classification of races to state in the first place why they wish to divide the human species and to give in detail the important reasons for subdividing our whole species. If important reasons for such classification are given, I think you will find that the number of races is always exceedingly small.

The Influence of Migration

If we consider these six or nine geographical races and the factors which produced them, I think the first thing we want to stress is migration.

All through human history, where we have any evidence of that history, people have migrated. In a recent issue of *American Anthropologist* there is a suggestion that it took 400,000 years for a gene that mutated in China to reach Europe. We know, historically, that Alexander the Great went from Greece into Northern India. We know that Mongol tribes migrated from Asia into Europe. Only a person seeking to believe that the races are very separate could possibly believe such a figure as that cited.

Migration has always been important in human history and there is no such thing as human populations which are completely separated from other human populations. And migration necessarily brings in new genes, necessarily reduces the differences between the races. For raciation to take place, then, there must be otner factors operating which create difference. Under certain circumstances, in very small populations, differences may be created by genetic drift, or because the founders are for chance reasons very different from other members of the species.

However, the primary factor in the creation of racial differences in the long term is selection. This means that the origin of races must depend on adaptation and that the differences between the races which we see must in times past have been adaptive. I stress the question of time here, because it is perfectly logical to maintain that in time past a shovel-shaped incisor, for example, was more efficient than an incisor of other forms and that selection would have been for this, and at the same time to assert that today this dental difference is of absolutely no social importance. It is important to make this point because people generally take the view that something is always adaptive or never adaptive, and this is a fundamental oversimplification of the facts.

Adaptation is always within a given situation. There is no such thing as a gene which has a particular adaptive value; it has this value only under set circumstances. For example, the sickle-cell gene, if Allison and others are right, protects against malaria. This is adaptive if there is malaria, but if there is not malaria it is not adaptive. The

adaptive value of the gene, then, is dependent on the state of medicine and has no absolute value. The same is true of the other characteristics associated with race.

I would like to go over some of the suggestions which have been made about the adaptive values of various structures in human beings, because I think these need to be looked at again.

I have stressed that the concept of race which comes from population genetics is compatible with what anthropologists have thought. I think that this concept represents great progress. But when I read the descriptions of the importance of adaptive characteristics, I am not sure that there has been any progress since the nineteenth century.

In this connection I should like to speak for a moment on the notion that the Mongoloids are a race which are adapted to live in the cold, that these are arctic-adapted people.

In the first place, in marked contrast to animals which are adapted to live in the arctic, large numbers of Mongoloids are living in the hot, moist tropics. Altogether unlike animal adaptation, then, the people who are supposed to be adapted to the cold aren't living under cold conditions, and I think we should stress this. For thousands of years the majority of this group have not been living under the conditions which are supposed to have produced them. They are presumed, as an arctic-adapted group following various laws, to have short extremities, flat noses, and to be stocky in build. They are, we might say, as stocky as the Scotch, as flat-nosed as the Norwegians, and as blonde as the Eskimos. Actually, there is no correlation, that is, none that has been well worked out, to support the notion that any of these racial groups is cold-adapted.

A few more words on this lack of correlation. If one follows the form of the nose, in Europe, as one moves north, narrow noses are correlated with cold climate; in Eastern Asia low noses are correlated with cold climate. In neither case is there the slightest evidence that the difference in the form of the nose has anything whatsoever to do with warming the air that comes into the face. Further, if we look at these differences expressed in this way, we see that they are posed in terms of nineteenth-century notions of what a face is all about.

Let us look at it differently. The nose is the center of a face. Most of a face is concerned with teeth, and bones, and muscles that have to do with chewing. The Mongoloid face is primarily the result of large masseter (chewing) muscles and the bones from which these muscles arise. This is a complex structural pattern related to the teeth, and a superficially very similar pattern may be seen in the Bushman, whose facial form can hardly be attributed to adaptation to cold.

The face of the Neanderthal man has recently been described also as cold-adapted, though it does not have the characteristics of the Mongoloid face. We are told that the blood supply to the Neanderthal face was greatly increased because the infraorbital foramen was large, bringing more blood to the front of the face. In actual fact, most of the blood to our face does not go through that artery. The artery that carries most of the blood to the face comes along the outside, and even our arteries are far too large to go through the mental or infraorbital foramen of Neanderthal man. This kind of statement, as well as the statement that the maxillary sinus warmed the air and that the function of a large orbit was to keep the eyes from freezing, seems to me an extraordinary retrogression to the worst kind of evolutionary speculation — speculation that antedates genetics and reveals a lack of any kind of reasonable understanding of the structure of the human face.

The point I wish to stress is that those who have spoken of the cold-adaptation of the Mongoloid face and of the Neanderthal face do not know the structure of the human face.

The adaptive value of skin color has been repatedly claimed, but recently Blum has indicated that the situation is more complicated than it appeared. In the first place, he points out the melanin in the skin doesn't do what anthropologists have said it has done. The part of the skin which mainly stops ultraviolet light, the short-wave length light, is a thickened *stratum corneum*, rather than melanin.

Again, the chimpanzee and the gorilla live in precisely the same climatic conditions in Uganda, but the gorilla has one of the blackest, most deeply pigmented skins of the primates and the chimpanzee has a very light skin. It simply is not true that skin color closely parallels climate. The point here is that racial classification tells us very little. The classification poses problems; it does not solve them.

In scientific method, as I see it, one looks at relevant data and when these data are laid out, as in, say, the classification of races, one may then find a correlation which is helpful. But after that, one has to do an experiment; one has to do something that shows that the correlation has validity. And it's no use continuing to correlate nose-form or skin color with climate. The crude correlations were made many years ago, and to advance the study of race requires new methods and more sophisticated analyses.

When I was a student, there were naive racial interpretations based on the metrical data. When these became unacceptable politically the same people used naive constitutional correlations to reach the same conclusions of social importance. Today we have naive concepts of adaptation, taking the place of the earlier interpretations, and a recrudescence of the racial thinking.

All along the line there have been valid problems in race, valid problems in constitution, and valid problems in adaptation. What I am protesting against strongly is the notion that one can simply take a factor, such as a high cheekbone, think that it might be related to climate, and then jump to this conclusion without any kind of connecting link between the two elements — without any kind of experimental verification of the sort of material that is being dealt with. If we took really seriously this notion that a flat face with large maxillary sinuses, deep orbits, and big brow ridges is cold-adapted, it is clear that the most cold-adapted animal in the primates is the gorilla.

Race, then, is a useful concept only if one is concerned with the kind of anatomical, genetic, and structural differences which were in time past important in the origin of races. Race in human thinking is a very minor concept. It is entirely worth while to have a small number of specialists, such as myself, who are concerned with the origin of gonial angles, the form of the nose, the origin of dental patterns, changes in blood-group frequencies, and so on. But this is a very minor, specialized kind of knowledge.

If classification is to have a purpose, we may look backward to the explanation of the differences between people — structural, anatomical, physiological differences — and then the concept of race is useful, but it is useful under no other circumstances, as far as I can see.

When the meaning of skin color and structure is fully understood, it will help us to understand the origin of races, but this is not the same thing as understanding the origin of our species. It will help in the understanding of why color was important in time long past, but it will have no meaning to modern technical society.

The Influence of Culture

I turn now to a brief statement on the influence of culture upon race. Beginning with agriculture and continuing at an ever-increasing rate, human customs have been inter-

posed between the organism and the environment. The increase of our species from perhaps as few as five million before agriculture to three billion today is the result of new technology, not of biological evolution. The conditions under which the races evolved are mainly gone, and there are new causes of mutation, new kinds of selection, and vast migration. Today the numbers and distribution of the peoples of the world are due primarily to culture. Some people think the new conditions are so different that it is better no longer to use the word race or the word evolution, but I personally think this confuses more than it clarifies.

All this does not mean that evolution has stopped, because the new conditions will change gene frequencies, but the conditions which produced the old races are gone. In this crowded world of civilization and science, the claim has been made repeatedly that one or another of the races is superior to the others. Obviously, this argument cannot be based on the past; because something was useful in times past and was selected for under conditions which are now gone, does not mean that it will be useful in the present or in the future.

The essential point at issue is whether the abilities of large populations are so different that their capacity to participate in modern technical culture is affected. Remember in the first place that no race has evolved to fit the selective pressures of the modern world. Technical civilization is new and the races are old. Remember also that all the species of *Homo* have been adapting to the human way of life for many thousands of years. Tools even antedate our genus, and our human biological adaptation is the result of culture. Man and his capacity for culture have evolved together, as Dr. Theodosius Dobzhansky has pointed out. All men are adapted to learn language — any language; to perform skillful tasks — a fabulous variety of tasks; to cooperate; to enjoy art; to practice religion, philosophy, and science.

Our species only survives in culture, and, in a profound sense, we are the product of the new selection pressures that came with culture.

Infinitely more is known about the language and culture of all the groups of mankind than is known about the biology of racial differences. We know that the members of every racial group have learned a vast variety of languages and ways of life. The interaction of genes and custom over the millenia has produced a species whose populations can learn to live in an amazing variety of complex cultural ways.

Racism is based on a profound misunderstanding of culture, of learning, and of the biology of the human species. The study of cultures should give a profound respect for the biology of man's capacity to learn. Much of the earlier discussion of racial inferiority centered on the discussion of intelligence; or, to put the matter more accurately, usually on that small part of biological intelligence which is measured by the IQ. In the earlier days of intelligence testing, there was a widespread belief that the tests revealed something which was genetically fixed within a rather narrow range. The whole climate of opinion that fostered this point of view has changed. At that time animals were regarded as primarily instinctive in their behavior, and the genes were supposed to exert their effects in an almost mechanical way, regardless of the environment. All this intellectual climate has changed. Learning has proved to be far more important in the behavior of many animal species, and the action of the complexes of genes is now known to be affected by the environment, as is, to a great degree, the performance that results from them. For example, Harlow has shown that monkeys learn to learn. Monkeys, in other words, become test wise. They become skillful in the solution of tests — so monkeys in Dr. Harlow's laboratories are spoken of as naive or as experienced in the use of tests.

To suppose that humans cannot learn to take tests is to suppose that humans are rather less intelligent than monkeys.

Krech and Rosenzweig have shown that rats raised in an enriched environment are much more intelligent and efficient as maze-solvers than rats that have been given no opportunity to learn and to practice before the testing. To suppose that man would not learn through education to take tests more efficiently, is to suppose that our learning capacities are rather less than those of rats.

The human is born with less than a third of the adult brain capacity, and there is tremendous growth of the cortex after birth. There is possibly no mammalian species in which the environment has a longer and more direct effect on the central nervous system than man. We should expect, then, that test results are going to be more affected by the environment of man than in the case of any other animal. Deprivation studies of monkeys and chimpanzees and clinical investigations of man show that the lack of a normal interpersonal environment may be devastating to the developing individual.

Intelligence Testing

Today one approaches the study of intelligence expecting to find that environment is important. The intellectual background is very different from that of the '20's. The general results on testing may be briefly summarized as follows:

> The average IQ of large groups is raised by education. I believe the most important data on this are the comparisons of the soldiers of World War I and of World War II. More than 80 per cent of the soldiers tested in World War II were above the mean of those tested in World War I. This means a wholesale massive improvement, judged by these tests, in the sons of the people who fought in World War I.

In the states where the least educational effort is made, the IQ is the lowest. In fact, as one looks at the review in Anastasi's book it is exceedingly difficult to see why anyone ever thought that the IQ measured innate intelligence, and not the genetic constitution as modified in the family, in the schools, and by the general intellectual environment.

I would suggest that if the intelligence quotients of Negroes and Whites in this country are compared, the same rules be used for these comparisons as would be used for comparisons of the data between two groups of Whites. This may not seem a very extreme thing to suggest, but if you look at the literature, you will find that when two groups of Whites differ in their IQ's, the explanation of the difference is immediately sought in schooling, environment, economic positions of parents, and so on, but that when Negroes and Whites differ in precisely the same way the difference is said to be genetic.

Let me give you but one example of this. Otto Klineberg showed years ago in excellent studies that the mean test scores of many Northern Negro groups were higher than those of certain groups of Southern Whites. When these findings were published, it was immediately suggested that there had been a differential migration and the more intelligent Negroes had moved to the North. But the mean of Northern Whites test results is above that of Southern Whites. Are we to believe that the intelligent Whites also moved to the North?

There is no way of telling what the IQ would be if equal opportunity were given to all racial and social groups. The group which is sociologically classified as Negro in the United States, about one-third of whose genes are of European origin, might well test

ahead of the Whites. I am sometimes surprised to hear it stated that if Negroes were given an equal opportunity, their IQ would be the same as the Whites'. If one looks at the degree of social discrimination against Negroes and their lack of education, and also takes into account the tremendous amount of overlapping between the observed IQ's of both, one can make an equally good case that, given a comparable chance to that of the Whites, their IQ's would test out ahead. Of course, it would be absolutely unimportant in a democratic society if this were to be true, because the vast majority of individuals of both groups would be of comparable intelligence, whatever the mean of these intelligence tests would show.

We can generalize this point. All kinds of human performance—whether social, athletic, intellectual—are built on genetic and environmental elements. The level of all kinds of performance can be increased by improving the environmental situation so that every genetic constitution may be developed to its full capacity. Any kind of social discrimination against groups of people, whether these are races, castes, or classes, reduces the achievements of our species, of mankind.

The Cost of Discrimination

The cost of discrimination is reflected in length of life. The Founding Fathers were wise to join life, liberty, and the pursuit of happiness, because these are intimately linked in the social and cultural system. Just as the restriction of social and economic opportunity reduces intelligence so it reduces length of life.

In 1900 the life expectancy of White males in the United States was 48 years, and in that same year the expectancy of a Negro male was 32 years; that is a difference of 50 per cent, or 16 years. By 1940 the difference had been reduced to ten years, and by 1958 to six. As the life expectancy of the Whites increased from 48 to 62 to 67 years, that of the Negroes increased from 32 to 52 to 61 years. They died of the same causes, but they died at different rates.

Discrimination, by denying equal social opportunity to the Negro, made his progress lag approximately 20 years behind that of the White. Somebody said to me, "Well, 61, 67, that's only six years." But it depends on whose six years it is. There are about 19 million people in this country sociologically classified as Negroes. If they die according to the death rate given above, approximately 100 million years of life will be lost owing to discrimination.

In 1958 the death rate for Negroes in the first year of life was 52 per thousand and for Whites 26. Thousands of Negro infants died unnecessarily. The social conscience is an extraordinary thing. A lynching stirs the whole community to action, yet only a single life is lost. Discrimination, through denying education, medical care, and economic progress, kills at a far higher rate. A ghetto of hatred kills more surely than a concentration camp, because it kills by accepted custom, and it kills every day in the year.

A few years ago in South Africa, the expectation of life for a Black man was 40 years, but it was 60 at the same time for a White man. At that same time a White woman could expect 25 more years of life than a Black woman. Among the Blacks the women lived no longer than the men. People speak of the greater longevity of women, but this is only because of modern medicine. High birth rates, high infant mortality, high maternal mortality—these are the hallmarks of the history of mankind.

Of course there are biological differences between male and female, but whether a woman is allowed to vote, or the rate that she must die in childbirth, these are a matter

of medical knowledge and of custom. Biological difference only expresses itself through the social system.

Who may live longer in the future—Whites or Negroes? There's no way of telling. Who may live longer in the future—males or females? There is no way of telling. These things are dependent on the progress in medical science and on the degree to which this progress is made available to all races and to both sexes.

When environment is important, the only way genetic difference may be determined is by equalizing the environment. If you believe in mankind, then you will want mankind to live on in an enriched environment. No one can tell what may be the ultimate length of life, but we do know that many people could live much longer if given a chance.

Whether we consider intelligence, or length of life, or happiness the genetic potential of a population is only realized in a social system. It is that system which gives life or death to its members, and in so doing changes the gene frequencies. We know of no society which has begun to realize the genetic potential of its members. We are the primitives living by antiquated customs in the midst of scientific progress. Races are products of the past. They are relics of times and conditions which have long ceased to exist.

Racism is equally a relic supported by no phase of modern science. We may not know how to interpret the form of the Mongoloid face, or why Rh° is of high incidence in Africa, but we do know the benefits of education and of economic progress. We know the price of discrimination is death, frustration, and hatred. We know that the roots of happiness lie in the biology of the whole species and that the potential of the species can only be realized in a culture, in a social system. It is knowledge and the social system which give life or take it away, and in so doing change the gene frequencies and continue the million-year-old interaction of culture and biology. Human biology finds its realization in a culturally determined way of life, and the infinite variety of genetic combinations can only express themselves efficiently in a free and open society.

References

Anastasi, Anne. *Differential Psychology: Individual and Group Differences in Behavior.* (3rd Edition.) New York: The Macmillan Company, 1958. xii, 664 pp.

Blum, Harold F. "Does the Melanin Pigment of Human Skin Have Adaptive Value?," *The Quarterly Review of Biology.* Vol. 36, 1961. pp. 50-63.

Coon, Carleton S. *The Origin of Races.* New York: Alfred A. Knopf, 1962. xlii, 724 pp., xxii.

Dobzhansky, Theodosius. *Mankind Evolving: The Evolution of the Human Species.* New Haven and London: Yale University Press, 1962. xiv, 382 pp.

Dublin, Louis I., Alfred J. Lotka, and Mortimer Spiegelman. *Length of Life: A Study of the Life Table.* (Revised Edition.) New York: The Ronald Press Company, 1949. xxvi, 380 pp.

Klineberg, Otto. *Race Differences.* New York and London: Harper & Brothers, 1935. x, 368 pp.

Krech, David, Rosenzweig, Mark R., and Bennett, Edward L., "Relations Between Brain Chemistry and Problem-Solving Among Rats Raised in Enriched and Impoverished Environments," *Journal of Comparative and Physiological Psychology,* Vol. 55, No. 5, October 1962., pp. 801-807.